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CHECKLIST OF THE MOTHS OF PALLISTER STATE NATURE PRESERVE, ASHTABULA COUNTY, OHIO (1988-1992) WITH ANALYSES OF ABUNDANCE

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ABSTRACT

The biodiversity of moths at Pallister State Nature Preserve in Ashtabula County, Ohio was studied by placing an ultraviolet light trap at the same location each year. The checklist tabulates five consecutive years of trapping (1988-1992) and includes 21,845 specimens representing 521 species. The study began in 1987 and continued through 1996, but only data for 1988-1992 are included here. The checklist is a historical record of the species that were present in 1988-1992 and the techniques used were designed so they can be duplicated in the future. The accumulation of species collected over time illustrates the importance of long-term studies. Species were still being added after ten years of trapping. The Shannon-Wiener Diversity Index for the moths collected in 1988-1992 is 6.71 and the Shannon-Wiener Evenness Index is 0.74. Two hundred seventeen of the 521 species are widespread in northeast Ohio, having also been collected in Columbiana, Stark, and Ashland Counties. The less abundant species at Pallister are not less likely to be widespread than the more abundant species at Pallister, except for the singletons. Six species of owl moths that were collected at Pallister are of special interest in Ohio. All specimens collected are deposited at The Cleveland Museum of Natural History, Cleveland, Ohio.

Introduction

The objective of this study was to document the population changes of native moths for ten years at several sites within the drainage basin of the Grand River in Trumbull, Ashtabula, and Lake Counties, Ohio, during gypsy moth invasion and control. This is the first in a series of checklists that tabulate the moths collected at each site during 1988–1992.

Over this same period, the population of the gypsy moth increased in the entire drainage basin. Pheromone trap catches of male gypsy moths increased at Pallister State Nature Preserve from $31 \pm 21(2)$ per trap in 1987 [mean \pm standard error (number of traps)], to $35 \pm 5(4)$ in 1988, $85 \pm 10(4)$ in 1989, $62 \pm 6(4)$ in 1990, and $216 \pm 50(4)$ in 1991. Pheromone trapping was discontinued after 1991. Ultraviolet-light-trap catches of male gypsy moths also increased, from 0 in 1987, to 16 in 1988, 42 in 1989, 77 in 1990, 61 in 1991, and 126 in 1992, but noticeable defoliation was not observed at Pallister State Nature Preserve.

The overall study provides baseline data on pre-outbreak moth diversity, as well as data on the impact of gypsy moth control agents.

Description of the Surveillance Site at Pallister State Nature Preserve

Pallister State Nature Preserve is composed of 34 ha of forest and is bordered by Crooked Creek on the west and southwest, Callender Road on the north and a private residence on the east (Figure 1). It extends into Rome Township on the east and is part of a much larger forested area of approximately 1800 ha that extends 3 km north, south, and east (Anonymous, 1995). The Preserve is situated on swampy glacial lake plain with fine-grained lacustrine silt and clay soils (White and Totten, 1979, p. 7, Pl. 1) overlain by rich organic muck.

The light trap at Pallister State Nature Preserve was located in Harts Grove Township in Ashtabula County on Callender Road at latitude $41^{\circ} 38' 06''$ N and longitude $80^{\circ} 54' 16''$ W (U.S. Geological Survey East Trumbull, Ohio, 7.5-minute quadrangle topographic map; Figure 1).

Pallister State Nature Preserve is located approximately 24 km east/northeast of the National Oceanic and Atmospheric Administration weather station at Chardon. The station at Chardon measured an average temperature of 9° Celsius, an average annual precipitation of 120 cm, and an average annual snowfall of 220 cm for 1988–1992.

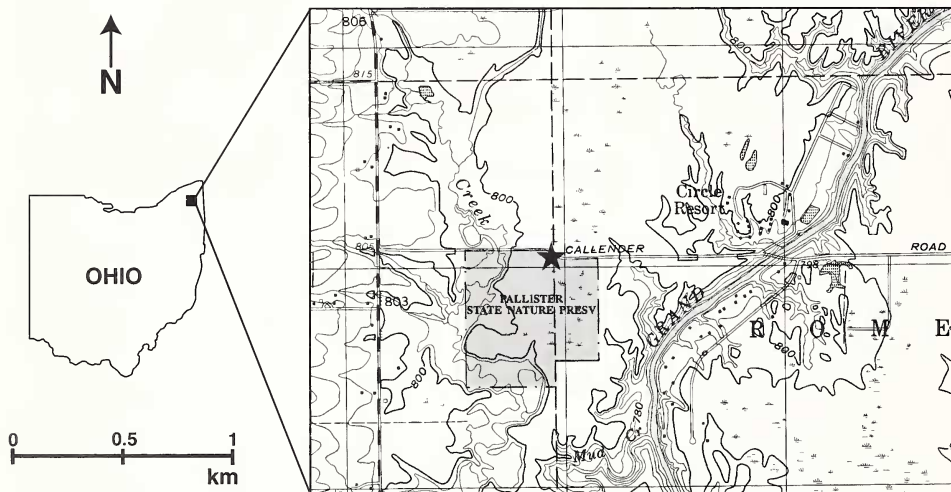


Figure 1. Map of the study area (adapted from the U.S. Geological Survey East Trumbull, Ohio, 7.5-minute quadrangle topographic map). Shaded area delineates Pallister State Nature Preserve; star indicates position of surveillance trap within the Preserve.

Table 1. Importance values for trees at the surveillance site at Pallister State Nature Preserve. The inventory included all woody stems with a circumference of five or more cm. A stem was counted as canopy only if it reached the uppermost layer of vegetation. Author citations according to Kartesz (1994); common names according to Weishaupt (1971).

Tree Species		Canopy	Understory
Maple, red	<i>Acer rubrum</i> L.	126	0
Oak, white	<i>Quercus alba</i> L.	46	0
Cherry, black	<i>Prunus serotina</i> Ehrh.	41	26
Oak, swamp white	<i>Quercus bicolor</i> Willd.	26	0
Tupelo, black	<i>Nyssa sylvatica</i> Marsh.	25	31
Oak, northern red	<i>Quercus rubra</i> L.	20	42
Beech, American	<i>Fagus grandifolia</i> Ehrh.	7	112
Ash	<i>Fraxinus</i> spp.	7	25
Birch, yellow	<i>Betula alleghaniensis</i> Britt.	0	33
Hop Hornbeam, eastern	<i>Ostrya virginiana</i> (Mill.) K. Koch	0	12
Pine, eastern white	<i>Pinus strobus</i> L.	0	10
Hornbeam, American	<i>Carpinus caroliniana</i> Walt.	0	8

The composition of the canopy and understory was evaluated for the 2500 m² of forest centered on the surveillance trap (point-quarter technique, nine points; Cottam and Curtis, 1956; Cox 1980). The area used for the evaluation, 0.25 ha, is smaller than the area from which the moths are drawn. The light was visible to human eyes at distances of 80–90m at Pallister. The importance values for the trees at the surveillance site at Pallister State Nature Preserve are given in Table 1.

The herbaceous plants included: sedges *Carex seorsa* Howe and *Carex folliculata* L.; turtlehead *Chelone glabra* L.; ill-scented trillium *Trillium erectum* L.; creeping wintergreen *Gaultheria procumbens* L.; goldthread *Coptis trifolia* (L.) Salisb. ssp. *groenlandica* (Oeder) Hulten; *Dalibarda repens* L.; ferns *Osmunda cinnamomea* L. and *Osmunda regalis* L.; partridge berry *Mitchella repens* L.; cucumber root *Medeola virginiana* L.; false solomon's-seal *Smilacina racemosa* (L.); *Polygonum punctatum* Ell.; and *Utricularia minor* L. (James K. Bissell, 1998, personal communication; author citations according to Kartesz, 1994). *Utricularia minor* L. is listed as rare by the Ohio Division of Natural Areas and Preserves. These species were selected from a longer list of Pallister species on deposit in the Herbarium at The Cleveland Museum of Natural History. The surveillance trap was within 300 m of a pasture, within 300 m of a bog and within 300 m of a creek lined with aspens and willows.

Surveillance Techniques

One Ellisco®-type ultraviolet light trap (15 watt, BL) was operated at the same location each year, from late May through September. The light was controlled by a timer from 7 p.m. to 8 a.m., eastern daylight time. The

trap was set up before 7 p.m. the evening of operation and emptied after 8 a.m. the next morning. Two killing agents, potassium cyanide and ethyl acetate, were used during each collecting period. Using both improved the condition of the moths in the catch as compared to using only one or the other. Collections were made one week apart regardless of weather. The entire catches were sorted and archived in cellophane envelopes and all data were computerized. All the specimens collected are deposited in the Insect Collection of The Cleveland Museum of Natural History.

Results and Discussion

A total of 21,845 specimens representing 521 species were collected in 1988–1992 (Appendix). Species were identified using Covell (1984), Ferguson (1985), Forbes (1923; 1948; 1954; 1960), Holland (1922), Rings et al. (1992), and Rockburne and Lafontaine (1976). Nomenclature for the Noctuidae was updated from that used by Hodges et al. (1983) to that used by Rings et al. (1992; after Poole, 1989). Crambidae is used according to Scholtens (1996). There are 33 species that have been designated as plus-groups (+). These are species that are easily confused with closely related species; the count for a plus group may therefore include individuals from more than one species.

The accumulation of species collected over time, from 1987 to 1996, is shown in Figure 2. In 1987 (not included in this checklist), 296 species were collected, and in 1996, after ten years, the total had reached 609 (1993–1996, also not included in this checklist). Figure 2 illustrates the importance of long-term studies. One or two years of monitoring would not have been long enough to estimate moth biodiversity at Pallister State Nature Preserve and five years would have been the minimum. The species accumulation curve was still rising after ten years of sampling. Rings and Metzler (1989) estimated that 600 to 1000 moth species may be sampled in a locality with high host plant diversity if collections are made at frequent intervals over five or more years. Our data are consistent with that assertion. It is expected that the asymptote of the curve is well above 600 species since a number of categories of moths are missing from our checklist: fall, winter, and early spring moths are missing because collecting was not begun until the end of May and collecting ended in September. Some species of moths are poorly sampled by light trapping. Also, many Microlepidoptera that were collected are not included because of the difficulty of identifying them.

Our checklist is a historical record of the moth species that were present in 1988–1992. The techniques were designed so that they can be duplicated in the future to document the changes in moth diversity that follow changes in land use and weather.

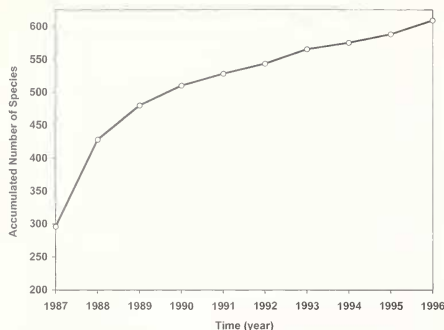


Figure 2. Plot of the annual accumulation of species collected at Pallister State Nature Preserve, 1987–1996.

Relative abundances of the 521 species are shown in Figure 3. The Shannon-Wiener Diversity function was used to measure species diversity (Krebs, 1994). This index takes into account both the number of species and the manner in which the individuals are distributed among the species. A greater number of species increases the index and a more even distribution of individuals among the species also increases the index. Evenness can vary from zero to one and an evenness of one indicates that all species have the same number of individuals. The Shannon-Wiener Diversity Index is 6.71 and the Shannon-Wiener Evenness Index is 0.74.

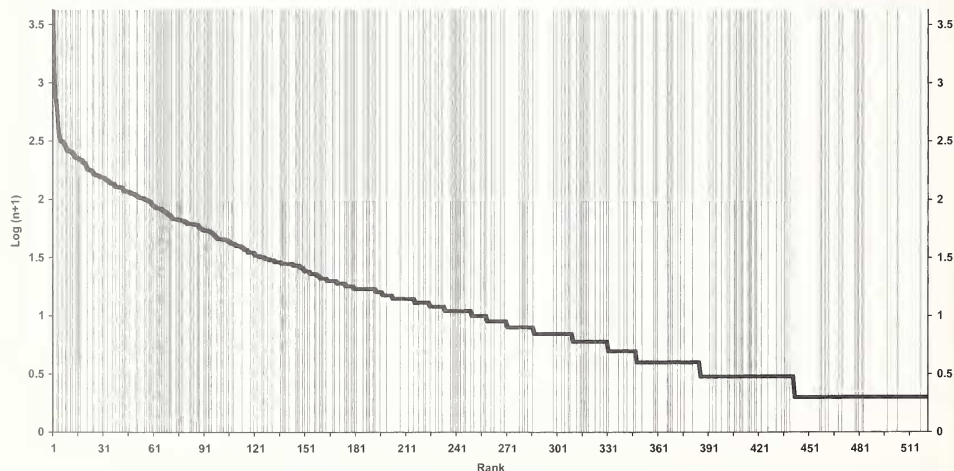


Figure 3. Plot of the logarithm of abundance versus rank. Vertical lines indicate species that are widespread in northeast Ohio. Species collected at Pallister State Nature Preserve, 1988–1992.

Almost 20 percent of the total count was composed of lesser maple spanworm moth *Itame pustularia* (6273), and red maple is the dominant canopy tree at this site. The next most abundant species was sod webworm *Crambus agitatellus* (5362+) whose larva feeds on grasses and low plants. Following, in order of decreasing abundance, were: disparaged arches *Polia detrecta* (10288+), whose larva feeds on clover, blueberries, oaks, etc.; the banded tussock moth *Halysidota tessellaris* (8203+), whose larva feeds on many deciduous trees; the gypsy moth *Lymantria dispar* (8318) whose larva feeds on shrubs and trees, especially oak; the forest tent caterpillar moth *Malacosoma disstria* (7698) whose larva feeds on trees and shrubs, especially aspens and maples; the esther moth *Hypagyrtis esther* (6655) whose larva feeds on pines; the angulose prominent *Peridea angulosa* (7920) whose larva feeds on oaks; the large mossy lithacodia *Lithacodia muscosa* (9047) whose larva feeds on grasses; and the snowy geometer *Eugonobapta nivosaria* (6965) whose larval host is unrecorded.

Figure 3 also indicates, with a vertical line, every species that had been collected at single locations in Columbiana County (Rings and Metzler, 1992), Stark County (Rings et al., 1987), and Ashland County (Rings and Metzler, 1989). A total of 217 Pallister species have been collected at all four sites and can be considered to be widespread in northeast Ohio. Data on a wide variety of plants and animals show a broad positive correlation between abundance and distribution (Gaston, 1988, 1990). Three explanations have been proposed (Krebs, 1994).

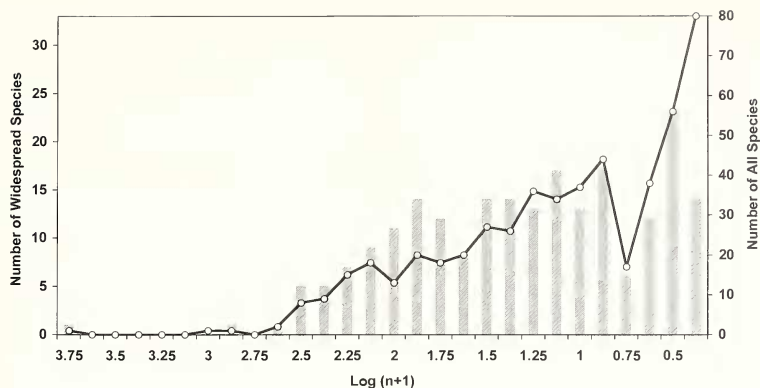


Figure 4. Correspondence between the total number of Pallister species in an abundance interval (line scale at right) and the number of widespread Pallister species in the same abundance interval (bar scale at left). Note that the y-axis scale for the widespread species is larger than the y-axis scale for the total number of species.

First, the relationship is an artifact of sampling because rarer species are less likely to be found. Second, species that use a restricted variety of resources are less likely to be abundant and widespread. And third, species that disperse more are more common and widespread. Our data (Figure 3) suggest that a positive correlation between abundance and distribution does not exist when abundance is viewed from the perspective of abundance at Pallister. Of the 217 Pallister species which are widespread in northeast Ohio, 95 had total counts of 10 or fewer at Pallister.

Overall, there is a close correspondence between the number of widespread species in an abundance interval and the total number of species (Figure 4). Only the decrease in the proportion of widespread species in the singleton interval conforms to expectation. The 80 singleton species at Pallister include only 14 widespread species, whereas the 56 doubleton species include 23 widespread species. The less abundant species at Pallister are not less likely to be widespread than the more abundant species with the exception of the singleton species which are less likely to be widespread.

Six species of owl moths collected at Pallister are listed as being of special interest in Rings et al. (1992): *Papaipema nepheleptena* (9490) whose larva bores in turtlehead; *Enargia decolor* (9549) whose larva feeds on trembling aspen, speckled alder, and willow; *Enargia infumata* (9550) whose larva feeds on trembling aspen and willow; puta sawfly *Anathix puta* (9962), whose larva feeds on trembling aspen; stormy arches *Polia umbrosa* (10275) whose larva feeds on alder and huckleberries; and scurvy quaker *Homorhodes fufurata* (10532) whose larva feeds on maples. One species, *Enois occulta* (10929)

whose larva feeds on birch and willow, is listed as status unknown. All of these host plants are present at Pallister.

Acknowledgments

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Appendix. Checklist of species collected at Pallister State Nature Preserve, 1988–92. Numbers preceding the species names are checklist numbers from Hodges et al. (1983). A plus-group (+) is a species that is easily confused with closely related species. Following the checklist number is the species name including author (abbreviations as listed in Hodges et al., 1983), date of collection, and count of specimens collected. When more than one collection date is listed, the first is the earliest seasonal date of collection and the second is the latest, both with the year in which that occurred. The count is the total number of specimens collected in 1988–1992.

Family HEPIALIDAE		3633	<i>Choristoneura parallela</i> (Rob.)
20	<i>Sthenopis quadriguttatus</i> (Grt.)		June 15, 1988–Aug. 16, 1990 Count 10
	July 4, 1989–July 15, 1988 Count 3	3635	<i>Choristoneura rosaceana</i> (Harr.)
Family OECOPHORIDAE			June 12, 1992–Sep. 14, 1990 Count 102
882	<i>Agonopterix robinella</i> (Pack.)	3648	<i>Archips argyrosipila</i> (Wlk.)
	Aug. 26, 1988 Count 1		June 22, 1990–June 29, 1988 Count 6
951	<i>Machimia tentoriferella</i> Clem.	3655	<i>Archips fervidana</i> (Clem.)
	Sep. 10, 1988 Count 1		July 4, 1989 Count 2
957	<i>Psilocorsis reflexella</i> Clem.	3672	<i>Syndemis afflictana</i> (Wlk.)
	June 1–Aug. 5, 1988 Count 111		May 18, 1988 Count 2
1014+	<i>Antaeotricha leucillana</i> (Zell.)	3686	<i>Clepsis melaleucana</i> (Wlk.)
	May 21, 1989–Aug. 31, 1990 Count 254		June 1, 1988–July 3, 1992 Count 29
1046	<i>Callima argenticinctella</i> Clem.	3695	<i>Sparganothis sulfureana</i> (Clem.)
	June 22, 1990 Count 2		July 4, 1989 Count 1
Family GELECHIIDAE		3720	<i>Sparganothis reticulatana</i> (Clem.)
2295	<i>Trichotaphe flavocostella</i> (Clem.)		June 22–Aug. 5, 1988 Count 9
	July 10, 1989 Count 1	3725	<i>Sparganothis petitiiana</i> (Rob.)
Family YPONOMEUTIDAE			June 13, 1991–July 24, 1989 Count 6
2420	<i>Yponomeuta multipunctella</i> Clem.	Family LIMACODIDAE	
	June 20, 1991–Aug. 26, 1988 Count 161	4652	<i>Tortricidia testacea</i> Pack.
Family SESHIDAE			June 1, 1990–July 15, 1988 Count 65
2554	<i>Synanthedon acerii</i> (Clem.)	4654	<i>Tortricidia flexuosa</i> (Grt.)
	June 6, 1991–Sep. 25, 1992 Count 3		May 28, 1992–July 27, 1990 Count 177
Family COSSIDAE		4659	<i>Packardia geminata</i> (Pack.)
2693	<i>Prionoxystus robiniae</i> (Peck)		June 1, 1988–July 10, 1992 Count 27
	June 15, 1988 Count 1	4661	<i>Packardia elegans</i> (Pack.)
Family TORTRICIDAE			June 6, 1991–July 10, 1992 Count 23
2863	<i>Hedya chionosema</i> (Zell.)	4665	<i>Lithacodes fasciola</i> (H.-S.)
	Aug. 5, 1988 Count 1		June 6, 1991–Aug. 7, 1992 Count 39
3186	<i>Epiblema scudderiana</i> (Clem.)	4667	<i>Apoda y-inversum</i> (Pack.)
	June 15, 1988 Count 1		June 22, 1988–July 20, 1990 Count 10
3361	<i>Ancylis semiovana</i> (Zell.)	4669	<i>Apoda biguttata</i> (Pack.)
	June 1–Aug. 19, 1988 Count 13		June 6, 1991–Aug. 5, 1988 Count 13
3494	<i>Melissopus latiferreanus</i> (Wlsm.)	4671	<i>Prolimacodes badia</i> (Hbn.)
	Aug. 14, 1989 Count 2		June 27, 1991–July 22, 1988 Count 4
3503	<i>Croesia semipurpurana</i> (Kft.)	4681	<i>Isa textula</i> (H.-S.)
	June 22, 1988–June 26, 1989 Count 7		June 20, 1991–July 10, 1989 Count 6
3594	<i>Pandemis limitata</i> (Rob.)	4685	<i>Adoneta spinuloides</i> (H.-S.)
	June 8–Aug. 31, 1990 Count 20		June 20, 1991–July 20, 1990 Count 4
3623	<i>Argyrotaenia quercifoliana</i> (Fitch)	4697	<i>Encleia delphinii</i> (Bdv.)
	June 6, 1991–July 31, 1992 Count 125		May 30–June 27, 1991 Count 11
3624	<i>Argyrotaenia alisellana</i> (Rob.)	Family CRAMBIDAE	
	June 6, 1991–July 3, 1992 Count 116	4703	<i>Gesneria centuriella</i> (D. & S.)
3625	<i>Argyrotaenia mariana</i> (Fern.)		June 4, 1989–July 22, 1988 Count 37
	May 18, 1988 Count 2	4748	<i>Mimnoessa iccissalis</i> (Wlk.)
3632	<i>Choristoneura fractivittana</i> (Clem.)		June 8, 1990–Aug. 27, 1992 Count 102
	May 30, 1991–June 26, 1992 Count 160	4749	<i>Mimnoessa fauldis</i> (Wlk.)
			July 24, 1989–Aug. 27, 1992 Count 4
		4751	<i>Mimnoessa gyralis</i> (Hulst)
			June 15, 1988–Sep. 9, 1989 Count 30

4755	<i>Synclita oblitalis</i> (Wlk.) June 8, 1990–Aug. 14, 1989	Count 3
4889	<i>Dicynolomia julianalis</i> (Wlk.) July 3, 1992–Sep. 7, 1990	Count 6
4897	<i>Evergestis pallidata</i> (Hufn.) May 30, 1991–Sep. 10, 1988	Count 31
4936	<i>Saurobotrys futilalis</i> (Led.) Aug. 2–Aug. 30, 1991	Count 10
4937	<i>Nascia acutella</i> (Wlk.) June 29, 1990–Aug. 2, 1991	Count 6
4944	<i>Crocidophora serratissimalis</i> Zell. June 1–Sep. 10, 1988	Count 206
4945	<i>Crocidophora tubercularis</i> Led. June 15, 1988–Aug. 21, 1989	Count 61
4949	<i>Ostrinia nubilalis</i> (Hbn.) June 1, 1988–Aug. 27, 1992	Count 20
4950	<i>Fumibotrys funalis</i> (Gn.) July 12, 1991–Aug. 14, 1989	Count 5
4951	<i>Perispasta caecularis</i> Zell. June 1, 1990–July 31, 1989	Count 7
4952	<i>Eurhyphara hortulata</i> (L.) June 26, 1989	Count 1
4953a	<i>Phlyctaenia coronata terialis</i> (Gn.) May 30, 1991–Aug. 27, 1992	Count 19
4962	<i>Hahncappisia maculenta</i> (G. & R.) June 1, 1988–Aug. 21, 1989	Count 8
5040	<i>Pyrausta bicoloralis</i> (Gn.) June 26, 1989–Sep. 13, 1991	Count 44
5071	<i>Pyrausta acronialis</i> (Wlk.) June 20, 1991–Sep. 2, 1989	Count 26
5079	<i>Udea rubigalis</i> (Gn.) May 28, 1989–Sep. 13, 1991	Count 60
5142	<i>Diacone elealis</i> (Wlk.) July 5, 1991–Aug. 7, 1992	Count 67
5156	<i>Nomophila nearctica</i> Mun. July 19–Aug. 30, 1991	Count 6
5159	<i>Desmia funeralis</i> (Hbn.) June 12, 1992–Sep. 7, 1990	Count 16
5182	<i>Blepharomastix ravalis</i> (Gn.) June 26, 1989–July 22, 1988	Count 2
5226	<i>Palpia magniferalis</i> (Wlk.) May 30–Aug. 2, 1991	Count 39
5228	<i>Polygrammodes flavidalis</i> (Gn.) June 19, 1989–Aug. 26, 1988	Count 65
5233	<i>Compacta capitalis</i> (Grt.) June 15, 1988	Count 1
5241	<i>Pantographa linata</i> (G. & R.) June 27, 1991–Aug. 27, 1992	Count 77
5272	<i>Herpetogramma bipunctalis</i> (F.) June 15, 1988–Aug. 14, 1989	Count 55
5275	<i>Herpetogramma peritextalis</i> (Led.) June 26–Aug. 21, 1989	Count 50
5280	<i>Herpetogramma aeglealis</i> (Wlk.) June 12, 1992–Aug. 2, 1991	Count 20
5281	<i>Pilocrocis ramentalis</i> Led. July 5, 1991–July 31, 1989	Count 22
5362+	<i>Crambus agitatellus</i> Clem. June 15, 1988–Sep. 9, 1989	Count 779

5420	<i>Microcrambus elegans</i> (Clem.) July 8, 1988	Count 1
5464	<i>Urola nivalis</i> (Drury) June 20, 1991–July 22, 1988	Count 18
5465	<i>Vaxi auratella</i> (Clem.) July 20–Aug. 3, 1990	Count 8
5497	<i>Eoreuma callista</i> Klotz July 3, 1992	Count 2

Family PYRALIDAE

5510	<i>Pyralis farinalis</i> L. July 8, 1988	Count 1
5518	<i>Aglossa cuprina</i> Zell. June 20, 1991–Aug. 31, 1990	Count 179
5524	<i>Hypsopygia costalis</i> (F.) June 22–July 22, 1988	Count 9
5532	<i>Herculia infimbrialis</i> Dyar July 24, 1989–Aug. 24, 1990	Count 6
5533	<i>Herculia olinalis</i> (Gn.) July 3–Aug. 27, 1992	Count 3
5552	<i>Galasa nigrinodis</i> (Zell.) July 5, 1991–Sep. 10, 1988	Count 4
5556	<i>Tosale oviplagalis</i> (Wlk.) June 20, 1991–July 10, 1989	Count 4
5571	<i>Condylolomia partipialis</i> Grt. June 29–July 20, 1990	Count 11
5577	<i>Epipaschia superatalis</i> Clem. June 20, 1991–Aug. 3, 1990	Count 9
5606	<i>Tetralopha asperatella</i> (Clem.) Aug. 9, 1990	Count 1
5997	<i>Euzophera ostricorella</i> Hulst June 26, 1989–Sep. 7, 1990	Count 7
6053	<i>Peoria approximella</i> (Wlk.) June 19, 1992–July 20, 1990	Count 7

Family THYRIDIDAE

6079	<i>Dysodia granulata</i> (Neum.) Aug. 5, 1988	Count 1
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Family THYATIRIDAE

6237	<i>Pseudothyrtria cymatophoroides</i> (Gn.) Aug. 5, 1988–Sep. 14, 1990	Count 2
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Family DREPANIDAE

6251	<i>Drepana arcuata</i> Wlk. May 30, 1991–Aug. 5, 1988	Count 4
6253	<i>Endeiliina herminata</i> (Gn.) June 29, 1988–Aug. 9, 1990	Count 2
6255	<i>Oreta rosca</i> (Wlk.) May 30, 1991–Sep. 9, 1989	Count 82

Family GEOMETRIDAE

6261	<i>Helionota cycladata</i> G. & R. June 15, 1988–July 3, 1992	Count 2
6270	<i>Protitame virginialis</i> (Hulst) June 15, 1988–Aug. 14, 1989	Count 12
6272	<i>Eumacaria latiferrugata</i> (Wlk.) Aug. 3, 1990	Count 1
6273	<i>Itame pustularia</i> (Gn.) June 13, 1991–Sep. 9, 1989	Count 4275

6299	<i>Itame coortaria</i> (Hulst) June 13, 1991–July 17, 1989.	Count 21	6739	<i>Euchlaena irraria</i> (B. & McD.) June 15, 1988.	Count 1
6303	<i>Itame subcessaria</i> (Wlk.) July 17–July 24, 1989.	Count 3	6740+	<i>Xanthotype urticaria</i> Swett May 30, 1991–Sep. 2, 1989.	Count 31
6335+	<i>Semiothisa aequiferaria</i> (Wlk.) May 30, 1991–Aug. 24, 1990.	Count 61	6753+	<i>Pero honestaria</i> (Wlk.) May 21, 1989–Aug. 27, 1992.	Count 108
6340	<i>Semiothisa minorata</i> (Pack.) Aug. 5, 1988.	Count 1	6763	<i>Nacophora quernaria</i> (J.E. Smith) June 1, 1990.	Count 1
6342	<i>Semiothisa bisignata</i> (Wlk.) June 8, 1990–Aug. 5, 1988.	Count 22	6796	<i>Campaea perlata</i> (Gn.) May 30, 1991–Sep. 24, 1988.	Count 230
6344+	<i>Semiothisa signaria</i> (Hbn.) May 30, 1991–Aug. 16, 1990.	Count 10	6797	<i>Ennomos magnaria</i> Gn. Aug. 14–Sep. 2, 1989.	Count 2
6386	<i>Semiothisa ocellinata</i> (Gn.) July 10, 1989.	Count 2	6798	<i>Ennomos subsignaria</i> (Hbn.) June 20, 1991–Aug. 21, 1992.	Count 147
6405	<i>Semiothisa gnophosaria</i> (Gn.) July 4, 1989–July 12, 1991.	Count 3	6819	<i>Metanema inatomaria</i> Gn. June 15, 1988–Aug. 16, 1990.	Count 6
6582	<i>Anacamptodes vellivolata</i> (Hulst) June 1, 1988.	Count 6	6820	<i>Metanema determinata</i> Wlk. July 5, 1991.	Count 2
6583	<i>Anacamptodes ephyriaria</i> (Wlk.) June 20, 1991–July 24, 1989.	Count 127	6822	<i>Metarranthis dharia</i> (Gn.) May 28, 1989.	Count 1
6584	<i>Anacamptodes humaria</i> (Gn.) June 20, 1991–July 31, 1989.	Count 5	6823	<i>Metarranthis angularia</i> B. & McD. June 22, 1988–July 3, 1992.	Count 3
6586	<i>Anacamptodes defectaria</i> (Gn.) July 6, 1990.	Count 2	6825	<i>Metarranthis indeclinata</i> (Wlk.) June 5–June 19, 1992.	Count 13
6588	<i>Iridopsis larvaria</i> (Gn.) May 21, 1989–Aug. 19, 1988.	Count 26	6826	<i>Metarranthis hypocharia</i> (H.-S.) June 1, 1988–July 3, 1992.	Count 106
6590	<i>Anavitrinella pampinaria</i> (Gn.) June 1, 1988–Sep. 13, 1991.	Count 53	6827	<i>Metarranthis refractaria</i> (Gn.) July 10, 1992.	Count 2
6597	<i>Ectropis crepuscularia</i> (D. & S.) June 6, 1991–Aug. 21, 1992.	Count 99	6828	<i>Metarranthis homuraria</i> (G. & R.) June 8–June 22, 1988.	Count 2
6598	<i>Protoboarmia porcelaria</i> (Gn.) June 5, 1992–Sep. 10, 1988.	Count 14	6835	<i>Cepphis armataria</i> (H.-S.) June 15–July 22, 1988.	Count 6
6599	<i>Epimecis hortaria</i> (F.) May 28, 1992–Sep. 14, 1990.	Count 43	6836	<i>Anagoga occiduaris</i> (Wlk.) July 24–Aug. 14, 1989.	Count 17
6620+	<i>Melanolophia canadaria</i> (Gn.) May 18, 1988–Sep. 14, 1990.	Count 217	6838+	<i>Probole amicaria</i> (H.-S.) May 28, 1992–Aug. 9, 1990.	Count 146
6638	<i>Eufidonia notataria</i> (Wlk.) June 12, 1989.	Count 1	6840	<i>Plagodis serinaria</i> H.-S. May 18, 1988–July 3, 1992.	Count 182
6640a	<i>Biston bendaria cognataria</i> (Gn.) Aug. 2, 1991.	Count 1	6841	<i>Plagodis kuetzingi</i> (Grt.) June 1, 1988.	Count 2
6654	<i>Hypagyrtis unipunctata</i> (Haw.) June 1–Aug. 24, 1990.	Count 27	6843	<i>Plagodis fervidaria</i> (H.-S.) July 24, 1989–Aug. 5, 1988.	Count 6
6655	<i>Hypagyrtis esther</i> (Barnes) May 30, 1991–Sep. 7, 1990.	Count 309	6844	<i>Plagodis alcoalaria</i> (Gn.) May 18, 1988–Aug. 7, 1989.	Count 88
6667	<i>Lomographa vestaliata</i> (Gn.) May 28, 1992–July 17, 1989.	Count 56	6863	<i>Caripeta divisata</i> Wlk. June 22, 1988–Aug. 16, 1990.	Count 3
6677	<i>Cabera erythemaria</i> Gn. May 30, 1991–Sep. 9, 1989.	Count 87	6884	<i>Besma endropiaria</i> (G. & R.) May 30, 1991–Aug. 21, 1992.	Count 45
6678	<i>Cabera variolaria</i> Gn. June 12–Aug. 21, 1989.	Count 7	6885	<i>Besma quercivoraria</i> (Gn.) May 18, 1988–Sep. 9, 1989.	Count 80
6720	<i>Lytrosis unitaria</i> (H.-S.) June 13, 1991–July 10, 1989.	Count 97	6888	<i>Lambdina fiscellaria</i> (Gn.) Sep. 6, 1991–Sep. 25, 1992.	Count 15
6724	<i>Euchlaena serrata</i> (Drury) June 20, 1991–July 10, 1989.	Count 6	6894a	<i>Lambdina fervidaria athasaria</i> (Wlk.) July 12, 1991–Aug. 27, 1992.	Count 3
6725	<i>Euchlaena muzaria</i> (Wlk.) June 30, 1991–July 24, 1989.	Count 64	6912	<i>Sicya macularia</i> (Harr.) June 13, 1991–July 10, 1989.	Count 34
6729	<i>Euchlaena johnsonaria</i> (Fitch) June 15, 1988–Aug. 21, 1989.	Count 10	6941	<i>Ensarca confusaria</i> Hbn. June 20, 1991–July 24, 1989.	Count 34

6963	<i>Tetracis crocallata</i> Gn. July 3–July 10, 1992	Count 2
6964	<i>Tetracis cachexiata</i> Gn. May 30, 1991–June 26, 1992.	Count 153
6965	<i>Eugonobapta nivosaria</i> (Gn.) June 20, 1991–July 31, 1992.	Count 258
6966	<i>Eutrapela clemataria</i> (J.E. Smith) May 18, 1988–Aug. 21, 1989	Count 127
6982	<i>Prochoerodes transversata</i> (Drury) June 20, 1991–Sep. 24, 1988.	Count 95
6987	<i>Antepione thisoaria</i> (Gn.) July 4–July 31, 1989	Count 5
7009	<i>Nematocampa limbata</i> (Haw.) June 6, 1991–Sep. 9, 1989.	Count 154
7046+	<i>Nemoria bistriaria</i> Hbn. July 12, 1991–Aug. 27, 1992.	Count 53
7047	<i>Nemoria rubrifrontaria</i> (Pack.) June 1, 1988.	Count 2
7048	<i>Nemoria nimosaria</i> (Gn.) May 28–Aug. 27, 1992	Count 9
7053	<i>Dichorda iridaria</i> (Gn.) May 28–Aug. 14, 1989	Count 4
7058	<i>Synchlora aerata</i> (F.) June 22, 1988–Sep. 13, 1991.	Count 12
7071	<i>Chlorochlamys chloroleucaria</i> (Gn.) June 5–Aug. 27, 1992	Count 5
7132	<i>Pleuroprucha insularia</i> (Gn.) June 22, 1988–Sep. 14, 1990.	Count 13
7136	<i>Cyclophora packardii</i> (Prout) July 1–Sep. 21, 1990.	Count 32
7139	<i>Cyclophora pendulinaria</i> (Gn.) July 12, 1991–Sep. 2, 1989.	Count 4
7157	<i>Scopula cacuminiaria</i> (Morr.) June 12, 1992–Aug. 31, 1990	Count 25
7159	<i>Scopula limboundata</i> (Haw.) June 15, 1988–Aug. 21, 1989	Count 153
7169	<i>Scopula inductata</i> (Gn.) June 12–Aug. 14, 1989	Count 11
7189	<i>Dysstroma herstillata</i> (Gn.) June 26, 1989–June 27, 1991.	Count 2
7196+	<i>Eulithis diversilineata</i> (Hbn.) June 27, 1991–Sep. 10, 1988.	Count 23
7236+	<i>Hydriomena renunciata</i> (Wlk.) May 18, 1988.	Count 1
7292	<i>Hydria prunivorata</i> (Fgn.) June 1–July 8, 1988.	Count 2
7368	<i>Xanthorhoe labradorensis</i> (Pack.) Aug. 19, 1988–Sep. 25, 1992.	Count 9
7388	<i>Xanthorhoe ferrugata</i> (Cl.) June 1–Sep. 10, 1988.	Count 6
7390	<i>Xanthorhoe lacustrata</i> (Gn.) June 1, 1990–Aug. 27, 1992.	Count 13
7394	<i>Epirrhoe alternata</i> (Muller) June 1, 1990–Aug. 30, 1991	Count 7
7399a	<i>Euphyia unangulata intermediata</i> (Gn.) May 30, 1991–Sep. 10, 1988.	Count 27
7414	<i>Orthonama obstripata</i> (F.) June 6, 1991–Aug. 24, 1990.	Count 42

7416	<i>Orthonama centrostrigaria</i> (Woll.) May 30–Sep. 6, 1991.	Count 117
7422	<i>Hydrelia inornata</i> (Hulst) June 12, 1992.	Count 1
7423	<i>Hydrelia albifera</i> (Wlk.) June 12–Aug. 7, 1989	Count 7
7430	<i>Trichodezia albiovittata</i> (Gn.) July 5, 1991–Aug. 5, 1988.	Count 2
7440	<i>Eubaphe mendica</i> (Wlk.) June 6, 1991–July 22, 1988.	Count 20
7445	<i>Horisme intestinata</i> (Gn.) June 8, 1990–Sep. 9, 1989.	Count 28
7474+	<i>Eupithecia miserulata</i> Grt. May 21, 1989–Sep. 14, 1990.	Count 137
7640	<i>Lobophora nivergerata</i> Wlk. June 15–June 22, 1988.	Count 2
7647	<i>Heterophleps triguttaria</i> H.-S. June 15, 1990–July 31, 1989.	Count 7
7648	<i>Dyspteris abortivaria</i> (H.-S.) June 15, 1988.	Count 1

Family EPIPLEMIDAE

7653	<i>Calledapteryx dryopterata</i> Grt June 20, 1991–Aug. 16, 1990.	Count 4
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Family MIMALLONIDAE

7659	<i>Lacosoma chiridota</i> Grt. June 15, 1988.	Count 1
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Family APATELODIDAE

7663	<i>Apateles torrefacta</i> (J.E. Smith) June 6, 1991–July 15, 1988.	Count 12
7665	<i>Olceclostera angelica</i> (Grt.) June 6, 1991–July 20, 1990.	Count 5

Family LASIOCAMPIDAE

7670	<i>Tolyte velleda</i> (Stoll) Sep. 6, 1991–Sep. 24, 1988.	Count 32
7687	<i>Phyllodesma americana</i> (Harr.) June 27, 1991– July 15, 1988.	Count 3
7698	<i>Malacosoma dissrria</i> Hbn. June 20, 1991–Aug. 5, 1988.	Count 313
7701	<i>Malacosoma americanum</i> (F.) June 20, 1991–July 17, 1989.	Count 115

Family SATURNIIDAE

7715	<i>Dryocampa rubicunda</i> (F.) May 30, 1991–July 17, 1992.	Count 29
7723	<i>Anisota virginienis</i> (Drury) July 10, 1989.	Count 1
7746	<i>Automeris io</i> (F.) May 30, 1991–June 26, 1989.	Count 10
7757	<i>Antheraea polyphemus</i> (Cram.) June 26, 1992–July 12, 1991.	Count 4
7758	<i>Actias luna</i> (L.) June 1, 1990–July 4, 1989.	Count 5

Family SPHINGIDAE

7787	<i>Ceratonia undulosa</i> (Wlk.) June 29–July 27, 1990.	Count 3
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7810	<i>Sphinx gordius</i> Cram. June 1, 1990.....	Count 1
7821	<i>Suerinthus jamaicensis</i> (Drury) May 30, 1991–Aug. 9, 1990.....	Count 3
7824	<i>Paonias excaecatus</i> (J.E. Smith) May 30, 1991–Aug. 5, 1988.....	Count 54
7825	<i>Paonias myops</i> (J.E. Smith) June 6, 1991–Aug. 14, 1989.....	Count 11
7827	<i>Laothoe juglandis</i> (J.E. Smith) May 30, 1991–July 15, 1988.....	Count 7
7871	<i>Deidamia inscripta</i> (Harr.) May 28, 1989.....	Count 2
7886	<i>Darapsa pholis</i> (Cram.) June 6, 1991–July 22, 1988.....	Count 3

Family NOTODONTIDAE

7895	<i>Clostera albosigna</i> Fitch May 28–Sep. 2, 1989.....	Count 16
7896	<i>Clostera inclusa</i> (Hbn.) Aug. 3, 1990.....	Count 1
7898	<i>Clostera strigosa</i> (Grt.) May 28, 1989–July 27, 1990.....	Count 16
7901	<i>Clostera apicalis</i> (Wlk.) July 5, 1991–Aug. 7, 1992.....	Count 10
7902	<i>Datana ministra</i> (Drury) June 29, 1988–July 20, 1990.....	Count 5
7903	<i>Datana angustii</i> G. & R. June 27, 1991–July 29, 1988.....	Count 5
7904+	<i>Datana drexlii</i> Hy. Edw. July 10, 1989–July 27, 1990.....	Count 13
7906+	<i>Datana contracta</i> Wlk. June 27, 1991–July 22, 1988.....	Count 5
7915	<i>Nadata gibbosa</i> (J.E. Smith) May 28, 1989–Aug. 27, 1992.....	Count 257
7917	<i>Hyperaeschra georgica</i> (H.-S.) May 30, 1991.....	Count 2
7919	<i>Peridea bastiricus</i> (Wlk.) May 30, 1991–July 29, 1988.....	Count 21
7920	<i>Peridea angulosa</i> (J.E. Smith) May 30, 1991–Sep. 9, 1989.....	Count 290
7922	<i>Pheosia rimosus</i> Pack. June 1, 1990–Sep. 9, 1989.....	Count 18
7924	<i>Odontotia elegans</i> (Stkr.) July 15, 1988.....	Count 1
7926	<i>Notodontia scitipennis</i> Wlk. July 19, 1991–Aug. 3, 1990.....	Count 3
7929	<i>Nerice bidentata</i> Wlk. June 1–Aug. 16, 1990.....	Count 10
7930	<i>Ellida caniplaga</i> (Wlk.) June 15, 1988–July 13, 1990.....	Count 7
7931	<i>Gluphisia septentrionis</i> Wlk. May 30, 1991–July 24, 1989.....	Count 7
7936	<i>Farcula borealis</i> (Guer.-Meneville) Aug. 5, 1988.....	Count 1
7951+	<i>Symmerista albifrons</i> (J.E. Smith) May 30, 1991–Aug. 16, 1990.....	Count 125
7957	<i>Dasylophia anguina</i> (J.E. Smith) June 15, 1990–Aug. 14, 1989.....	Count 4
7958	<i>Dasylophia thyatiroides</i> (Wlk.) June 1–Aug. 26, 1988.....	Count 10

7975	<i>Macnurocampa marthesia</i> (Cram.) June 20, 1991–Aug. 9, 1990.....	Count 117
7994	<i>Heterocampa guttivitta</i> (Wlk.) May 28, 1989–July 22, 1988.....	Count 136
7995	<i>Heterocampa bimdata</i> Wlk. May 30, 1991–Aug. 27, 1992.....	Count 16
7998	<i>Lochmaeus manteo</i> Doubleday July 13–Aug. 9, 1990.....	Count 26
7999	<i>Lochmaeus bilineata</i> (Pack.) June 1–Aug. 19, 1988.....	Count 26
8005	<i>Schizura ipomoeae</i> Doubleday May 30–Aug. 16, 1991.....	Count 10
8006	<i>Schizura badia</i> (Pack.) June 1, 1988–Aug. 9, 1990.....	Count 13
8007	<i>Schizura niconis</i> (J.E. Smith) June 5, 1992–Aug. 31, 1990.....	Count 66
8011	<i>Schizura leptinoides</i> (Grt.) June 15, 1990–Aug. 5, 1988.....	Count 8
8012	<i>Oligocentria semirufescens</i> (Wlk.) June 20, 1991–July 17, 1989.....	Count 3
8017	<i>Oligocentria ligicolor</i> (Wlk.) July 22, 1988–Aug. 16, 1990.....	Count 5

Family ARCTIIDAE

8045.1	<i>Crambidia pallida</i> Pack. July 24, 1989–Aug. 31, 1990.....	Count 18
8090	<i>Hypoprepia fucosa</i> Hbn. June 27, 1991–Aug. 16, 1990.....	Count 242
8104	<i>Comachata cadburyi</i> Franc. June 12, 1992.....	Count 1
8107	<i>Haploa clymene</i> (Brown) July 12, 1991–Aug. 7, 1992.....	Count 14
8121+	<i>Holonetina aurantiaca</i> (Hbn.) June 6, 1991–Aug. 9, 1990.....	Count 216
8129	<i>Pyrrharctia isabella</i> (J.E. Smith) May 30, 1991–Aug. 24, 1990.....	Count 23
8133	<i>Spilosoma latipennis</i> Stretch June 1, 1988–July 3, 1992.....	Count 16
8134	<i>Spilosoma congrua</i> Wlk. May 28, 1989–Aug. 2, 1991.....	Count 164
8137	<i>Spilosoma virginica</i> (F.) June 1, 1990–Sep. 6, 1991.....	Count 46
8140	<i>Hyphautria cinea</i> (Drury) June 20, 1991–July 10, 1992.....	Count 2
8156	<i>Phragmatobia fuliginosa</i> (L.) July 12, 1991–July 31, 1989.....	Count 8
8169+	<i>Apantesis phalerata</i> (Harr.) June 12, 1992–Aug. 21, 1989.....	Count 14
8197	<i>Apantesis virgo</i> (L.) July 17–July 24, 1989.....	Count 4
8203+	<i>Halysidota tessellaris</i> (J.E. Smith) June 6, 1991–Aug. 7, 1992.....	Count 387
8211	<i>Lophocampa caryae</i> Harr. May 30, 1991–June 15, 1988.....	Count 45
8214	<i>Lophocampa maculata</i> Harr. May 30, 1991.....	Count 1
8230	<i>Cycnia tenera</i> Hbn. June 15, 1988–July 13, 1990.....	Count 9
8231	<i>Cycnia oregonensis</i> (Stretch) July 29, 1988.....	Count 1

- 8238 *Euchaetes egle* (Drury)
June 20, 1991–July 24, 1989 Count 13
- 8262 *Ctenucha virginica* (Esp.)
June 12, 1989–June 15, 1988 Count 3
- 8267 *Ciseps fulvicollis* (Hbn.)
May 30, 1991–Sep. 9, 1989 Count 31

Family LYMANTRIDAE

- 8296 *Dasychira basiflava* (Pack.)
July 5, 1991–Aug. 16, 1990 Count 39
- 8302 *Dasychira obliquata* (G. & R.)
Aug. 9, 1990–Aug. 21, 1989 Count 6
- 8314 *Orgyia definita* Pack.
July 8, 1988–Sep. 14, 1990 Count 5
- 8316 *Orgyia leucostigma* (J.E. Smith)
July 20, 1991–Sep. 10, 1988 Count 9
- 8318 *Lymantria dispar* (L.)
July 5, 1991–Aug. 27, 1992 Count 322

Family NOCTUIDAE

- 8322 *Idia americanalis* (Gn.)
May 30, 1991–Sep. 25, 1992 Count 94
- 8323+ *Idia aemula* Hbn.
May 30, 1991–Sep. 21, 1990 Count 66
- 8326 *Idia rotundalis* (Wlk.)
July 5, 1991–Sep. 10, 1992 Count 201
- 8327 *Idia forbesi* (French)
July 4–July 31, 1989 Count 28
- 8329 *Idia diminutis* (B. & McD.)
July 4, 1989–Aug. 27, 1992 Count 135
- 8334 *Idia lubricalis* (Gey.)
July 5–Sep. 13, 1991 Count 30
- 8338 *Phalaenophana pyramusalis* (Wlk.)
June 4, 1989–Aug. 26, 1988 Count 8
- 8340 *Zanclognatha lituralis* (Hbn.)
June 1, 1990–Aug. 19, 1988 Count 5
- 8345 *Zanclognatha laevigata* (Grt.)
July 12, 1991–Sep. 2, 1989 Count 19
- 8348 *Zanclognatha pedipalis* (Gn.)
Aug. 19, 1988 Count 1
- 8349 *Zanclognatha protummalis* (Wlk.)
July 5, 1991–July 31, 1989 Count 7
- 8351 *Zanclognatha cruralis* (Gn.)
June 8, 1990–July 22, 1988 Count 12
- 8352+ *Zanclognatha jachnusalis* (Wlk.)
June 20, 1991–Sep. 21, 1990 Count 142
- 8355 *Chytolita morbidalis* (Gn.)
June 1, 1988–July 10, 1992 Count 60
- 8356 *Chytolita petrealis* Grt.
June 15, 1990–Aug. 27, 1992 Count 27
- 8357 *Macrochilo absorptalis* (Wlk.)
July 4, 1989–July 27, 1990 Count 8
- 8357.1 *Macrochilo hypocritalis* Fgn.
July 4–July 17, 1989 Count 3
- 8358 *Macrochilo litophora* (Grt.)
June 27, 1991–Aug. 9, 1990 Count 12
- 8360 *Macrochilo orCIFERALIS* (Wlk.)
June 12–Aug. 27, 1992 Count 3
- 8361 *Macrochilo louisiana* (Fbs.)
July 12, 1991 Count 1

- 8362 *Phalaenostola metonalis* (Wlk.)
June 1, 1988–Sep. 7, 1990 Count 15
- 8363 *Phalaenostola eumelusalis* (Wlk.)
July 20, 1990 Count 1
- 8364 *Phalaenostola larentioides* Grt.
June 29, 1990–Aug. 14, 1989 Count 2
- 8368 *Tetanolita floridana* (Sm.)
July 3–Aug. 7, 1992 Count 2
- 8370 *Bleptina caradrinalis* Gn.
June 20, 1991–July 24, 1989 Count 6
- 8378 *Renia salusalis* (Wlk.)
July 17, 1992 Count 4
- 8379 *Renia factiosalis* (Wlk.)
July 12, 1991–Aug. 27, 1992 Count 29
- 8381 *Renia discoloralis* Gn.
July 19, 1991–Aug. 27, 1992 Count 28
- 8386 *Renia adspersigillus* (Bosc)
June 6, 1991–Aug. 27, 1992 Count 32
- 8387 *Renia sobrialis* (Wlk.)
July 4, 1989–July 24, 1992 Count 10
- 8393 *Lascoria ambigua* Wlk.
June 5, 1992–July 27, 1990 Count 2
- 8397 *Palthis angulalis* (Hbn.)
June 1, 1988–Sep. 13, 1991 Count 10
- 8398 *Palthis asopalalis* (Gn.)
June 26, 1992–Sep. 13, 1991 Count 27
- 8404 *Rivula propinquialis* Gn.
May 30, 1991–Sep. 24, 1988 Count 34
- 8411 *Colobochyla interpuncta* (Grt.)
June 12–July 31, 1989 Count 11
- 8412 *Melanomma auricinctaria* Grt.
June 1, 1990–Sep. 9, 1989 Count 19
- 8421 *Hypenodes fractilinea* (Sm.)
June 5–June 26, 1992 Count 27
- 8426 *Dyspyralis illocata* Warr.
July 12–July 19, 1991 Count 5
- 8427 *Dyspyralis puncticosta* (Sm.)
July 5–July 19, 1991 Count 13
- 8428 *Dyspyralis nigella* (Stkr.)
July 5, 1991–Aug. 14, 1989 Count 63
- 8441 *Bomolocha manalis* (Wlk.)
June 15, 1990–Sep. 13, 1991 Count 18
- 8442 *Bomolocha baltimoralis* (Gn.)
June 12, 1989–Sep. 7, 1990 Count 44
- 8444 *Bomolocha palparia* (Wlk.)
June 1, 1990–Aug. 14, 1989 Count 6
- 8445 *Bomolocha abalienalis* (Wlk.)
Aug. 9–Sep. 7, 1990 Count 3
- 8446 *Bomolocha deceptalis* (Wlk.)
July 19, 1991–July 29, 1988 Count 2
- 8465 *Plathypena scabra* (F.)
June 20–Sep. 21, 1991 Count 16
- 8479 *Spargaloma sexpunctata* Grt.
June 8, 1990–Sep. 6, 1991 Count 10
- 8481 *Phytometra rhodarialis* (Wlk.)
Aug. 14, 1989 Count 1
- 8490 *Pangrapta decoralis* Hbn.
May 30, 1991–Sep. 9, 1989 Count 36

8491	<i>Ledaea perditialis</i> (Wlk.) May 21, 1989–Aug. 27, 1992	Count 113	8857	<i>Catocala ultronia</i> (Hbn.) July 19, 1991–Sep. 25, 1992	Count 15
8499	<i>Metactetra discalis</i> (Grt.) July 24–July 31, 1989	Count 2	8858	<i>Catocala crataegi</i> Saund. July 20, 1990–July 22, 1988	Count 3
8514	<i>Scolecocampa liburnia</i> (Gey.) June 20, 1991–Aug. 14, 1989	Count 40	8863	<i>Catocala mira</i> Grt. July 19, 1991–Aug. 27, 1992	Count 27
8555	<i>Scolipteryx libatrix</i> (L.) July 24, 1992	Count 1	8864	<i>Catocala grynea</i> (Cram.) June 27, 1991–Sep. 9, 1989	Count 73
8587	<i>Panopoda rufinargo</i> (Hbn.) June 15–Aug. 5, 1988	Count 18	8865	<i>Catocala praeclara</i> G. & R. July 13–Aug. 24, 1990	Count 10
8588	<i>Panopoda carneicosta</i> Gn. July 10–July 24, 1989	Count 3	8867	<i>Catocala blandula</i> Hulst July 15–July 29, 1988	Count 2
8689	<i>Zale lunata</i> (Drury) July 5, 1991–Sep. 14, 1990	Count 6	8878	<i>Catocala amica</i> (Hbn.) July 22, 1988–Sep. 14, 1990	Count 10
8697	<i>Zale minerea</i> (Gn.) June 1, 1990–July 31, 1989	Count 14	8881	<i>Abrastola urentis</i> Gn. July 12, 1991	Count 1
8716	<i>Zale unilineata</i> (Grt.) June 15, 1988	Count 1	8898	<i>Allagrapha aerea</i> (Hbn.) June 6, 1991–Sep. 14, 1990	Count 22
8717	<i>Zale horrida</i> Hbn. June 4, 1989–July 22, 1988	Count 14	8908	<i>Autographa precatianis</i> (Gn.) June 4, 1989–Sep. 25, 1992	Count 17
8719	<i>Euparthenos nubilis</i> (Hbn.) July 6, 1990	Count 1	8924	<i>Anagrapha falcifera</i> (Kby.) July 12, 1991–Sep. 25, 1992	Count 5
8721	<i>Allotria elonympha</i> (Hbn.) June 1, 1988–Aug. 27, 1992	Count 25	8952	<i>Plusia comtexta</i> Grt. July 19, 1991	Count 1
8727	<i>Paralithia bistriaris</i> Hbn. June 1, 1988–Sep. 13, 1991	Count 41	8956	<i>Marathyssa basalis</i> Wlk. May 28, 1989	Count 1
8738+	<i>Caenurgina crassiuscula</i> (Haw.) July 22, 1988–Aug. 30, 1991	Count 3	8957	<i>Paectes oculatrix</i> (Gn.) June 22, 1988–Aug. 14, 1989	Count 3
8764	<i>Argyrostromis anilis</i> (Drury) July 4, 1989–Aug. 19, 1988	Count 2	8970	<i>Baileya ophiolunica</i> (Gn.) May 21, 1989–July 3, 1992	Count 61
8778	<i>Catocala habilis</i> Grt. Aug. 31–Sep. 14, 1990	Count 3	8971	<i>Baileya dormitans</i> (Gn.) June 1, 1988–June 26, 1992	Count 11
8781	<i>Catocala Judith</i> Stkr. Sep. 2, 1989	Count 1	8972	<i>Baileya levitans</i> (Sm.) June 22, 1988–Aug. 7, 1989	Count 6
8785	<i>Catocala residua</i> Grt. Aug. 31–Sep. 14, 1990	Count 3	8973	<i>Baileya anstralis</i> (Grt.) June 1, 1990	Count 1
8788	<i>Catocala relecta</i> Grt. Aug. 19, 1988–Sep. 9, 1989	Count 7	8983	<i>Meganola minuscula</i> (Zell.) May 18, 1988–Aug. 7, 1989	Count 111
8792	<i>Catocala vidua</i> (J.E. Smith) Aug. 2, 1991–Sep. 14, 1990	Count 3	8983.1	<i>Meganola phylla</i> (Dyar) June 12, 1989–Aug. 19, 1988	Count 13
8795	<i>Catocala palaeogama</i> Gn. Aug. 24, 1990–Aug. 27, 1992	Count 2	8983.2	<i>Meganola spodia</i> Franc. June 22, 1990–July 31, 1989	Count 17
8797	<i>Catocala subnata</i> Grt. Aug. 21, 1989	Count 1	9030	<i>Ozarba aerea</i> (Grt.) July 5, 1991	Count 1
8801	<i>Catocala ilia</i> (Cram.) July 5, 1991–Sep. 25, 1992	Count 13	9037	<i>Hyperstrotia pervertens</i> (B. & McD.) May 30, 1991–July 27, 1990	Count 30
8802	<i>Catocala cerogama</i> Gn. Aug. 26, 1988–Aug. 27, 1992	Count 2	9038	<i>Hyperstrotia villificans</i> (B. & McD.) June 19, 1989–July 12, 1991	Count 16
8803	<i>Catocala relictus</i> Wlk. Aug. 26, 1988	Count 1	9040	<i>Hyperstrotia secta</i> (Grt.) July 10, 1989–Aug. 7, 1992	Count 11
8805	<i>Catocala unijuga</i> Wlk. Aug. 26, 1988–Sep. 9, 1989	Count 2	9044	<i>Thioptera nigrofimbria</i> (Gn.) July 12, 1991	Count 1
8832	<i>Catocala cara</i> Gn. Aug. 19, 1988–Sep. 21, 1990	Count 3	9046	<i>Lithacodia bellicula</i> Hbn. June 1, 1990–July 29, 1988	Count 5
8833	<i>Catocala concumbens</i> Wlk. Aug. 19, 1988	Count 1	9047	<i>Lithacodia muscosula</i> (Gn.) May 30–Aug. 30, 1991	Count 265
8851	<i>Catocala coccinata</i> Grt. July 13–Aug. 16, 1990	Count 6	9048	<i>Lithacodia albidula</i> (Gn.) June 27–Aug. 2, 1991	Count 8

- 9053 *Pseudostrotia carneola* (Gn.)
May 30, 1991–Aug. 21, 1989 Count 71
- 9055.1 *Maliathya synochitis* (G. & R.)
June 15, 1990–July 29, 1988 Count 19
- 9056 *Homophoberia cristata* Morr.
July 3, 1992–Aug. 21, 1989 Count 6
- 9057 *Homophoberia apicosa* (Haw.)
May 30, 1991–Aug. 24, 1990 Count 78
- 9062 *Cerna cerintha* (Tr.)
June 15–July 15, 1988 Count 19
- 9065 *Leuconycta dipteroides* (Gn.)
May 30–Aug. 2, 1991 Count 16
- 9066 *Leuconycta lepidula* (Grt.)
June 1–Aug. 19, 1988 Count 8
- 9090 *Tarachidia candefacta* (Hbn.)
June 15, 1988–Sep. 6, 1991 Count 6
- 9095 *Tarachidia erastrioides* (Gn.)
June 15, 1988–Sep. 6, 1991 Count 12
- 9185 *Colocasia propinquilinea* (Grt.)
May 30–July 12, 1991 Count 52
- 9193 *Raphia frater* Grt.
May 30–Aug. 2, 1991 Count 16
- 9200 *Acronicta americana* (Harr.)
May 30, 1991–July 27, 1990 Count 12
- 9203 *Acronicta dactylina* Grt.
June 22, 1988–July 19, 1991 Count 3
- 9227 *Acronicta laetifica* Sm.
June 13, 1991–July 29, 1988 Count 3
- 9229 *Acronicta hasta* Gn.
May 28–Aug. 7, 1989 Count 9
- 9235 *Acronicta spinigera* Gn.
May 30, 1991–Aug. 14, 1989 Count 36
- 9237 *Acronicta interrupta* Gn.
July 24–Aug. 21, 1989 Count 3
- 9238 *Acronicta lobeliae* Gn.
June 8, 1990–Aug. 14, 1989 Count 2
- 9242 *Acronicta exilis* Grt.
June 15, 1988–Aug. 7, 1989 Count 7
- 9243 *Acronicta ovata* Grt.
May 30, 1991–Aug. 5, 1988 Count 59
- 9244 *Acronicta modica* Wlk.
June 12, 1989–Aug. 5, 1988 Count 19
- 9245+ *Acronicta haesitata* (Grt.)
May 30–Aug. 2, 1991 Count 224
- 9251 *Acronicta retardata* (Wlk.)
June 22, 1988–Aug. 16, 1990 Count 3
- 9261 *Acronicta impressa* Wlk.
July 5, 1991–Aug. 21, 1989 Count 12
- 9272 *Acronicta oblinta* (J.E. Smith)
June 15, 1988–Aug. 21, 1989 Count 3
- 9285 *Polygrammate hebraeicum* Hbn.
May 30, 1991–July 29, 1988 Count 101
- 9286 *Harrisiemna trisignata* (Wlk.)
July 24, 1989 Count 1
- 9301 *Eudryas grata* (F.)
May 30, 1991–July 31, 1989 Count 12
- 9328 *Apamea nigrior* (Sm.)
June 29, 1988–July 6, 1990 Count 2
- 9332 *Apamea vulgaris* (G. & R.)
June 27, 1991 Count 1
- 9348 *Apamea amputatrix* (Fitch)
July 24–Aug. 27, 1992 Count 2
- 9364 *Apamea sordens* (Hufn.)
June 26, 1992–Aug. 2, 1991 Count 2
- 9373 *Apamea helva* (Grt.)
Aug. 14, 1989 Count 1
- 9404 *Oligia modica* (Gn.)
July 17, 1989–Aug. 30, 1991 Count 5
- 9406 *Oligia fragilinea* (Grt.)
July 20, 1990–Aug. 16, 1991 Count 3
- 9419 *Oligia mactata* (Gn.)
Sep. 14, 1990 Count 1
- 9427 *Meropon diversicolor* (Morr.)
Aug. 31, 1990–Sep. 13, 1991 Count 7
- 9449 *Archana oblonga* (Grt.)
Aug. 19, 1988 Count 1
- 9454 *Amphipoea velata* (Wlk.)
June 20, 1991 Count 1
- 9457+ *Amphipoea americana* (Speyer)
July 27, 1990–Aug. 7, 1992 Count 2
- 9463 *Parapamea buffaloensis* (Grt.)
Aug. 26, 1988–Sep. 9, 1989 Count 2
- 9471 *Papaipema activorens* Hamp.
Sep. 10, 1988 Count 1
- 9483 *Papaipema inquaesita* (G. & R.)
Aug. 23, 1991–Sep. 25, 1992 Count 11
- 9485 *Papaipema baptisiae* (Bird)
Sep. 9, 1989–Sep. 14, 1990 Count 4
- 9486 *Papaipema birdi* (Dyar)
Aug. 21, 1989–Sep. 13, 1991 Count 4
- 9490 *Papaipema nepheleptena* (Dyar)
Sep. 21, 1990 Count 1
- 9503 *Papaipema rigida* (Grt.)
Sep. 9, 1989 Count 1
- 9505 *Papaipema cerussata* (Grt.)
Sep. 9, 1989–Sep. 25, 1992 Count 5
- 9509 *Papaipema unimoda* (Sm.)
Sep. 14–Sep. 21, 1990 Count 2
- 9520 *Achatodes zeae* (Harr.)
June 20, 1991–Aug. 5, 1988 Count 3
- 9523 *Bellura gortynoides* Wlk.
July 12, 1991–Aug. 14, 1989 Count 2
- 9525 *Bellura obliqua* (Wlk.)
June 1, 1990–June 4, 1989 Count 2
- 9526 *Bellura densa* (Wlk.)
July 31, 1989 Count 1
- 9545 *Euplexia benesimilis* McD.
May 30, 1991–Aug. 9, 1990 Count 45
- 9546 *Phlogophora iris* Gn.
June 1–June 15, 1988 Count 3
- 9547 *Phlogophora periculosa* Gn.
July 3–Sep. 10, 1992 Count 10
- 9549 *Enargia decolor* (Wlk.)
July 19, 1991 Count 1
- 9550 *Enargia infumata* (Grt.)
July 17, 1992 Count 1

9551	<i>Euargia mephisto</i> Franc. June 22, 1990–July 3, 1992	Count 5	9961	<i>Anathix ralla</i> (G. & R.) Aug. 19, 1988–Sep. 25, 1992	Count 17
9555	<i>Ipinorpha pleonectusa</i> Grt. May 19, 1991–Sep. 9, 1989	Count 13	9962	<i>Anathix puta</i> (G. & R.) Sep. 2, 1989	Count 1
9556	<i>Chytonix palliatricula</i> (Gn.) June 1, 1988–Aug. 3, 1990	Count 83	9989	<i>Stryna privata</i> (Wlk.) Sep. 9, 1989	Count 1
9560	<i>Dypterygia rozmani</i> Berio June 12, 1989	Count 1	10033	<i>Catabena lineolata</i> Wlk. July 4, 1989	Count 1
9578	<i>Hyppa xylinoidea</i> (Gn.) May 30, 1991–Aug. 27, 1992	Count 16	10194	<i>Cucullia lucifuga</i> (D. & S.) Aug. 16, 1990	Count 1
9582	<i>Nedra ramosula</i> (Gn.) July 19, 1991–Sep. 21, 1990	Count 2	10200	<i>Cucullia asteroides</i> Gn. Aug. 19, 1988	Count 1
9618	<i>Phosphila turbulenta</i> Hbn. June 20, 1991–July 13, 1990	Count 2	10202	<i>Cucullia convexipennis</i> G. & R. July 12, 1991	Count 1
9619	<i>Phosphila miseloides</i> (Gn.) June 26, 1992–July 13, 1990	Count 3	10275	<i>Polia nimbosea</i> (Gn.) June 22, 1990–Aug. 27, 1992	Count 2
9631	<i>Callopietria mollissima</i> (Gn.) May 30–Aug. 16, 1991	Count 16	10276	<i>Polia imbrifera</i> (Gn.) June 13, 1991–June 29, 1988	Count 8
9638	<i>Amphipyra pyramidoides</i> Gn. July 22, 1988–Sep. 25, 1992	Count 128	10288+	<i>Polia detracta</i> (Wlk.) May 30–Aug. 23, 1991	Count 649
9647	<i>Athetis miranda</i> (Grt.) July 3, 1992–Aug. 19, 1988	Count 2	10292	<i>Melanarcha adjuncta</i> (Gn.) Aug. 9, 1990–Aug. 19, 1988	Count 3
9650	<i>Anorthodes tarda</i> (Gn.) June 5–Sep. 25, 1992	Count 16	10299	<i>Lacanobia subjuncta</i> (G. & R.) June 1, 1990–July 19, 1991	Count 2
9662	<i>Balsa malana</i> (Fitch) June 15–Aug. 16, 1990	Count 8	10300	<i>Spiramater grandis</i> (Gn.) June 8–June 15, 1988	Count 3
9663	<i>Balsa tristrigella</i> (Wlk.) May 30, 1991–July 10, 1989	Count 103	10301	<i>Spiramater lutra</i> (Gn.) June 15, 1988	Count 1
9664	<i>Balsa labecula</i> (Grt.) June 15–July 29, 1988	Count 17	10368	<i>Lacinipolia meditata</i> (Grt.) Aug. 19, 1988	Count 2
9678	<i>Elaphria versicolor</i> (Grt.) June 26, 1989	Count 1	10397	<i>Lacinipolia renigera</i> (Steph.) June 12–Sep. 9, 1989	Count 45
9681	<i>Elaphria festivoidea</i> (Gn.) May 30, 1991–July 8, 1988	Count 6	10405	<i>Lacinipolia lorea</i> (Gn.) June 6, 1991–July 10, 1989	Count 38
9688	<i>Galgula partita</i> Gn. July 10, 1992–Aug. 26, 1988	Count 5	10436	<i>Aletia oxygala</i> (Grt.) May 30–Aug. 30, 1991	Count 14
9689	<i>Perigea xanthoides</i> Gn. May 30, 1991–Sep. 9, 1989	Count 67	10438	<i>Pseudaletia unipuncta</i> (Haw.) May 18–Sep. 10, 1988	Count 34
9690	<i>Platysenta videns</i> (Gn.) June 15–June 29, 1988	Count 5	10444+	<i>Leucania phragmatidicola</i> Gn. July 3, 1992	Count 2
9696	<i>Platysenta vecors</i> (Gn.) June 8, 1990–Aug. 7, 1992	Count 5	10446+	<i>Leucania multilinea</i> Wlk. May 30, 1991–Aug. 24, 1990	Count 8
9720	<i>Ogdoconta cinereola</i> (Gn.) May 30, 1991–Sep. 7, 1990	Count 74	10447	<i>Leucania commoides</i> Gn. Sep. 25, 1992	Count 1
9725	<i>Stiriodes obtusa</i> (H.-S.) June 8, 1990	Count 1	10461+	<i>Leucania nrsula</i> (Fbs.) June 12, 1992–Sep. 2, 1989	Count 22
9815	<i>Cosmia calami</i> (Harv.) July 10, 1989–Aug. 7, 1992	Count 48	10495+	<i>Orthosia hibisci</i> (Gn.) July 10, 1989	Count 1
9818	<i>Amolita fessa</i> Grt. June 20, 1991–July 17, 1992	Count 15	10501	<i>Crocigrapta normani</i> (Grt.) May 18, 1988–June 12, 1992	Count 4
9878	<i>Lithomoia gernana</i> (Morr.) Sep. 10, 1988	Count 1	10521	<i>Morrisonia confusa</i> (Hbn.) May 18, 1988–June 12, 1992	Count 7
9888	<i>Lithophane inominata</i> (Sm.) Sep. 14, 1990	Count 1	10521.1	<i>Morrisonia latex</i> (Gn.) June 1–June 29, 1988	Count 13
9889	<i>Lithophane petulca</i> Grt. Sep. 21, 1990	Count 1	10524	<i>Nephelodes minians</i> Gn. Aug. 23, 1991–Sep. 25, 1992	Count 83
9957	<i>Smirna bicolorago</i> (Gn.) Sep. 21, 1990–Sep. 25, 1992	Count 2	10532	<i>Homorthodes furfurata</i> (Grt.) June 20, 1991–July 15, 1988	Count 8

10563	<i>Protorthodes oviduca</i> (Gn.) May 28, 1989.	Count 1	10942.1+	<i>Xestia dolosa</i> Franc. May 30, 1991–Sep. 25, 1992.	Count 225
10578	<i>Pseudorthodes vecors</i> (Gn.) June 1, 1988–Aug. 27, 1992.	Count 41	10943	<i>Xestia normaniana</i> (Grt.) Aug. 7, 1992–Sep. 13, 1991.	Count 61
10585	<i>Orthodes crenulata</i> (Butler) June 1–Aug. 19, 1988.	Count 9	10944	<i>Xestia smithii</i> (Snell.) Aug. 19, 1988–Sep. 25, 1992.	Count 53
10587	<i>Orthodes cynica</i> Gn. May 30, 1991–Sep. 25, 1992.	Count 175	10950+	<i>Xestia bicarnea</i> (Gn.) July 29–Sep. 10, 1988.	Count 84
10627	<i>Tricholita signata</i> (Wlk.) July 10, 1992–Sep. 6, 1991.	Count 11	10954	<i>Xestia bugrai</i> Kocak Sep. 14, 1990.	Count 1
10663	<i>Agrotis ipsilon</i> (Hufn.) May 28, 1989–Sep. 25, 1992.	Count 24	10998	<i>Choephora fungorum</i> G. & R. Sep. 10, 1988.	Count 1
10674+	<i>Feltia subgothica</i> (Haw.) July 19, 1991–Sep. 10, 1988.	Count 16	11000	<i>Anaplectoides prasina</i> (D. & S.) June 27, 1991.	Count 1
10676	<i>Feltia herilis</i> (Grt.) July 31, 1989–Sep. 25, 1992.	Count 51	11006	<i>Protolampra brunneicollis</i> (Grt.) June 15, 1990–Sep. 2, 1989.	Count 67
10891	<i>Ochropleura plecta</i> (L.) May 18, 1988–Sep. 13, 1991.	Count 160	11010	<i>Heptagrotis phyllophora</i> (Grt.) June 29, 1988–July 3, 1992.	Count 6
10903+	<i>Euagrotis illapsa</i> (Wlk.) Aug. 2, 1991–Sep. 10, 1988.	Count 4	11029+	<i>Abagrotis alternata</i> (Grt.) July 5, 1991–Sep. 25, 1992.	Count 28
10915	<i>Peridroma saucia</i> (Hbn.) June 29, 1988.	Count 2	11149	<i>Schinia trifascia</i> Hbn. July 27, 1990–July 29, 1988.	Count 2
10929	<i>Eurois occulta</i> (L.) Aug. 3, 1990–Aug. 21, 1992.	Count 2			